Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

The effect of pion parton distributions on light-flavor asymmetry in the proton sea[1] CHRISTOPHER RILEY, AARON FISH, Seattle University — Recent experimental evidence demonstrates an asymmetry in the $\bar{d}$ and $\bar{u}$ content of the proton sea. This asymmetry can be explained by the Heisenberg uncertainty principle, which allows for the fluctuation of a proton into baryon-meson pairs, creating a meson cloud for the proton. We represent the splitting functions for the baryon-meson fluctuations by two-body Light-Cone Model (LCM) wave functions. These splitting functions can then be convoluted with pion valence- and sea-quark parton distribution functions (PDFs) to determine the meson cloud contributions to the $\bar{d}$ and $\bar{u}$ content in the proton. There are many widely accepted PDFs currently used to describe the pion quark distributions. A comparison of convolutions utilizing different pion PDFs is presented. The probability of fluctuation for given baryon-meson pairs has been varied within an acceptable range to determine values yielding closest agreement with E866 data. We also present predictions for the $\bar{d}/\bar{u}$ ratio to be determined by the SeaQuest experiment E906, now running at Fermilab.

[1]This work is supported by the National Science Foundation under Grant No. 1516105.

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Date submitted: 21 Jul 2016 Electronic form version 1.4